

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

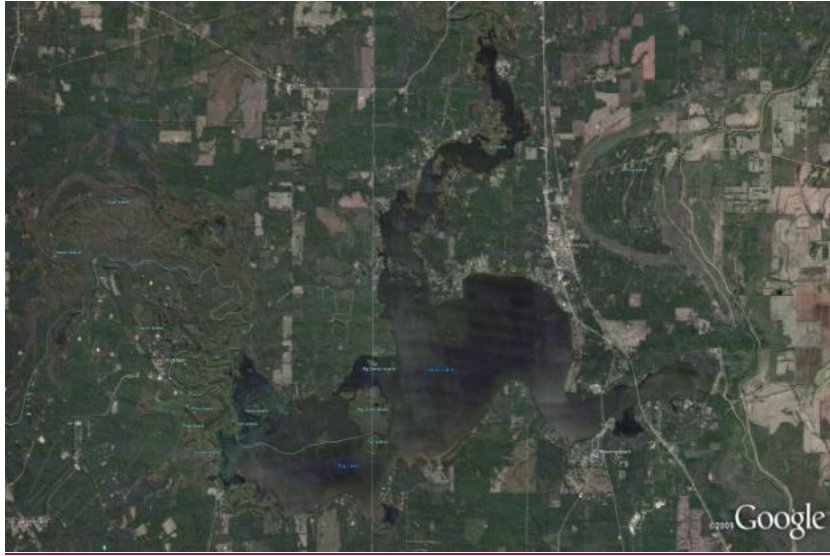
OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

2013 AQUATIC VEGETATION CONTROL PLAN

CADDO LAKE



LDWF Inland Fisheries - District 1



Date Lake Formed – Caddo Lake is a natural lake formed in 1811 when the New Madrid earthquake caused the land in this area to subside. U.S. Army Corps of Engineers (USACOE) built a spillway across Cypress Creek in 1914 and stabilized the boundary of Caddo Lake. In 1971 the USACOE completed a new dam just downstream from the old structure.

Waterbody Type – natural lake situated on gently rolling, poorly drained soils with minimum pool maintained by manmade spillway. Large areas of the lake are comprised of cypress forests.

Parish – Caddo Parish; the lake encompasses portions of Texas and Louisiana with the state line bisecting the lake into roughly equal portions.

Age and condition of control structure – no control structure, spillway is approximately 40 years old, good condition

Type of control structure – no drawdown capability; spillway of stepped design with 860 feet of the concrete spillway set at 168.5 MSL and 1540 feet of the concrete spillway set at 170.5 MSL.

Water level (MSL) – 168.5 MSL at normal pool stage. Normal seasonal water level fluctuations from approximately 167.5 MSL to 171.5 MSL

Surface area – 25,400 acres at normal pool stage, ranges from 18,700 acres during normal seasonal low water levels up to 35,000 acres at normal seasonal high water levels. Approximately 13,000 acres in Louisiana.

Average depth – 5.5 feet at normal pool stage

Watershed ratio – 69:1

No Drawdown Capability

Lake Commission – Caddo Lake Watershed District Commission

This commission is inactive, has not met in approximately 5 years and was not active prior to that time.

Not to be confused with the Caddo Lake Institute - a group of concerned citizens organized to support Caddo Lake.

Creation / Nomination – The Caddo Lake Watershed District Commission created by state statute. Members are appointed by the Caddo Parish Commission.

(PART XIX. CADDO LAKE WATERSHED DISTRICT

§3087.71. Creation; location

There is hereby created a recreation and water conservation district to be known as the "Caddo Lake Watershed District" to be comprised of all of Ward 1 of Caddo Parish.

Acts 1995, No. 345, §1.

Caddo Lake Watershed District Commission

Name	Address	Phone #	Term Expires
Wes Wyche	P.O. Box 31109 Shreveport, LA 71130	(318) 673-6072	12-12-2012
J. B. "Bob" Roddey	12971 Highway 1 Oil City, LA 71061	(318) 995-6497	12-12-2012
Patsy Lee	6555 Northwood Lane Blanchard, LA 71009	(318) 929-4518	12-12-2012
Dale Nix, Jr. (Chairman)	P.O. Box 595 Mooringsport, LA 71060	(318) 996-7653	12-12-2012
Dr. Charles McCormick	P.O. Box 566 Vivian, LA 71082	(318) 221-3902	12-12-2012

Procedure for spillway openings – Not applicable as there is no drawdown capability.

What significant stakeholders use the lake?

Recreational use of Caddo Lake is primarily by lake residents, anglers, duck hunters, recreational boaters, and non-consumptive nature observers.

Caddo Lake is unique in that offshore drilling for oil occurs on many areas of the lake, and the oil companies have a vested interest in maintaining boating access throughout the lake.

Several municipalities in Louisiana and Texas rely on Caddo Lake as a municipal water supply: Caddo Waterworks Oil City Water System, Mooringsport Water System, Vivian

Water System, East Cove Utilities Shreveport, Town of Greenwood, Blanchard Water System, Blanchard

An electric power plant in Louisiana uses the waters from Caddo Lake for cooling purposes.

What are their needs and concerns?

The primary concern of the majority of user groups is recreational fishing, boating and hunting access. The primary concern of shoreline residents is maintaining access to the lake from their homes and camps, and the aesthetic quality of their lakeside home sites.

The oil companies engaged in offshore operations on the lake are interested in maintaining access for boats and barges to service the offshore platforms.

Municipalities which withdraw water from the lake are interested in maintaining a sufficient lake level so that intakes draw water of good quality for purification and intakes are not clogged by aquatic vegetation. They are also concerned about applications of herbicides, oil and chemical spills and other pollutants in the vicinity of the water intakes or in sufficient quantities to affect the potable water.

The primary concern of the electric power plant is maintaining sufficient lake level and the intake not clogging from aquatic vegetation.

What is the history of aquatic vegetation complaints?

Aquatic vegetation complaints are common and have become chronic following the invasion of giant salvinia in 2006. Most complaints of giant salvinia and water hyacinth originate from the Jeems Bayou area and those concerning American Lotus and occasionally alligator weed are from the lower end of the lake.

Have there been any controversial issues on the lake?

As Caddo Lake is a border water shared with Texas, there have been many controversies, over the years concerning fisheries management, recreational and commercial fishing regulations, aquatic vegetation control efforts, and enforcement efforts.

The issue which has had the greatest impact on Caddo Lake was altering the inflows to the lake following construction of the Lake of The Pines. This event greatly altered the water regime which had many negative effects on Caddo Lake, particularly on the upper end of the lake. This negated the flushing that was historically present in that area of the lake, thus increasing the rates of sedimentation and organic deposits, as well as contributing to the presence of hypoxic / anoxic zones. This information comes from the Texas Parks and Wildlife Department (TPWD). It is in their portion of the lake.

Aquatic Vegetation Status:

In 2012, giant salvinia again became problematic on Caddo Lake. Contract sprayers, in addition to LDWF crews, treated the plant in an attempt to control the spread across the lake. As in years past, Jeems Bayou and Green Brake have been the main problem areas on the lake. In addition to these spots, the lower end of the lake around the dam and Mooringsport has been engulfed with salvinia as well. In December of 2012 and Jan 2013, large rains have flushed a large portion of salvinia that was at the dam over and into Twelve Mile Bayou. Twelve Mile Bayou dumps into the Red River. Contract efforts are to begin in Feb. 2013 in these problem areas.

In July of 2012, giant salvinia coverage on the Louisiana side was relatively sparse and widely scattered, with most plants located in the Jeem's Bayou area. Giant salvinia covered approximately 200 acres. Hydrilla coverage was reduced significantly from 2011 to less than 50 acres. American lotus covered approximately 50 acres on the Louisiana side of the lake, mainly just west of the power plant, and between Mooringsport and the dam. That coverage returns every year. Giant salvinia coverage was approximately 450 acres in Louisiana at that time.

Problematic vegetation as of Feb. 2013

Giant Salvinia-450 acres, type map attached below.

Hydrilla- None was found (water was very turbid due to recent rainfall). Minimal amounts are expected during the growing season.

American lotus- None visible at this time, though it is expected to cover approximately 300 acres during the growing season.

Limitations:

The biggest limiting factor for aquatic vegetation control efforts on Caddo Lake is the lack of drawdown capability. Other issues are restrictions on herbicide applications near potable water intakes and dense cypress forests and shallow backwater areas which restrict access for spray boats.

Past Control Measures:

Historic aquatic plant control efforts have been primarily foliar herbicide applications consisting of either glyphosate or diquat with a non-ionic surfactant for emergent and floating vegetation as needed.

Recent aquatic plant control measures have included foliar herbicide applications (diquat at 0.75 gal per acre mixed with a non-ionic surfactant at 0.25 gal per acre) for giant salvinia along with limited foliar herbicide applications for emergent vegetation along the inhabited shoreline areas that included water hyacinth, alligator weed, American lotus, and fragrant

water lily. These plants were treated with glyphosate and a non-ionic surfactant at 0.5 gallons and 1qt per acre, respectively. Giant salvinia weevils were introduced as a method of biological control, but no success has been noted thus far. The cold weather intolerance of the weevils and successive unusually cold winters had previously rendered this biological control ineffective on Caddo Lake. In 2012, there were 42,300 adult giant salvinia weevils stocked on Caddo Lake in the Green Brake area. Efforts to control giant salvinia have included large-scale herbicide applications by LDWF spray crews and the use of private applicators. In 2012, the following aquatic species and acreages were treated by LDWF and contract sprayers combined:

Giant Salvinia- 1,546 acres
Alligator weed- 35 acres
American Lotus- 8 acres
Common Salvinia- 48 acres
Water hyacinth- 24 acres

Recommendations:

Vegetation control efforts will be conducted in coordination with the Texas Parks and Wildlife Department.

Surveys to check for giant salvinia on Caddo Lake will be performed periodically and herbicide applications made as needed. Foliar herbicide applications by LDWF spray crews are planned for control of giant salvinia and other noxious emergent and floating vegetation on Caddo Lake. Timing of spray efforts will depend upon the level of coverage and recurrence. A mix of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) surfactants will be used from April 1 – October 31. Outside of that time period, diquat (0.75 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) will be used. It may be necessary to use additional LDWF spray crews or private applicators if giant salvinia cannot be controlled utilizing spray crews assigned to District 1. These options will be enacted if total coverage on the Louisiana side of the lake reaches the 150 acre mark.

For control of American Lotus, glyphosate will be used at a rate of 0.5 gal per acre with one qt per acre of non ionic surfactant.

If large amounts of hydrilla return, triploid grass carp will be considered as a potential control measure.

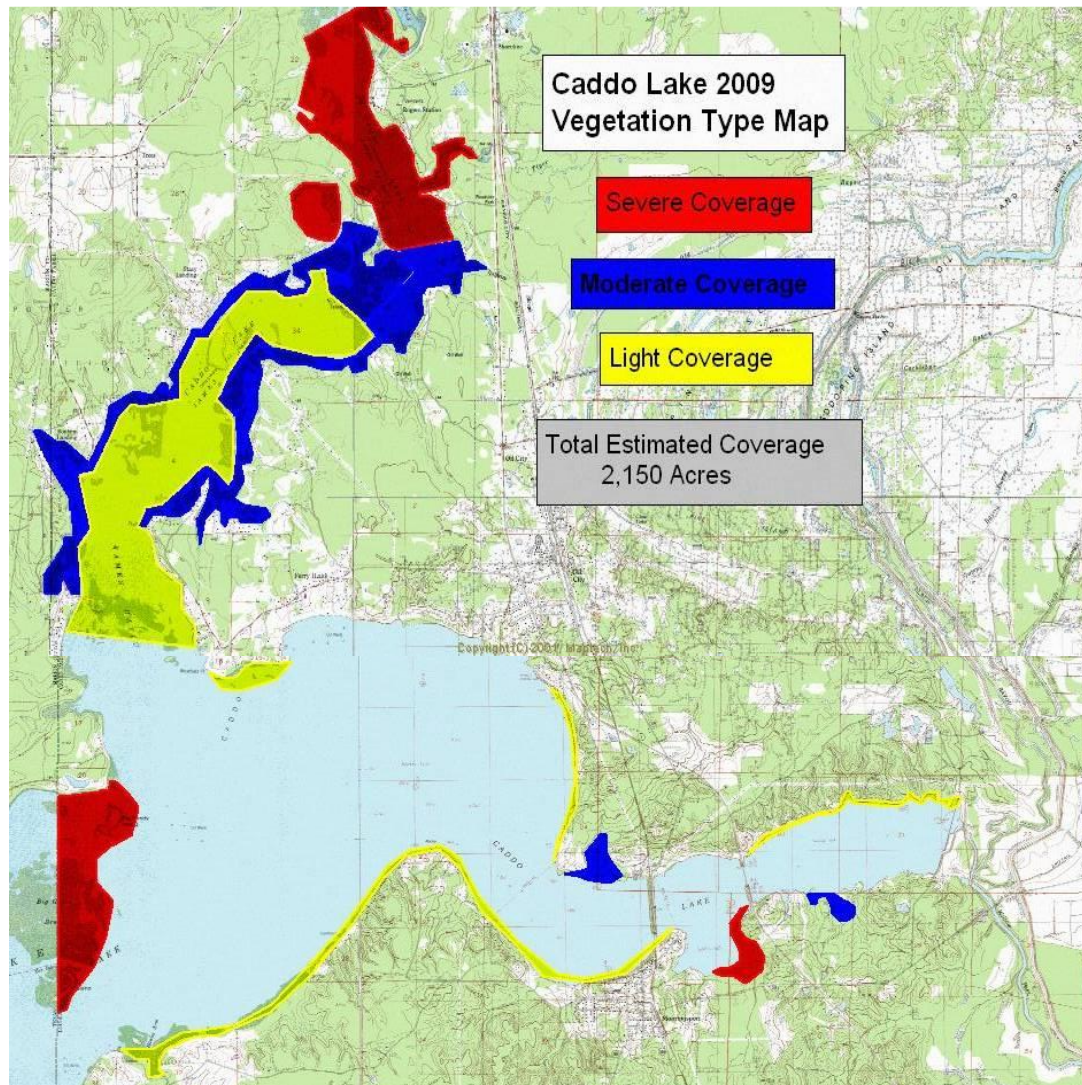
Salvinia weevils will be stocked in areas that are difficult to access for foliar herbicide applications. Potential sites include; the water intake area on the upper end of Jeems Bayou, Jap Island, and Green Brake.

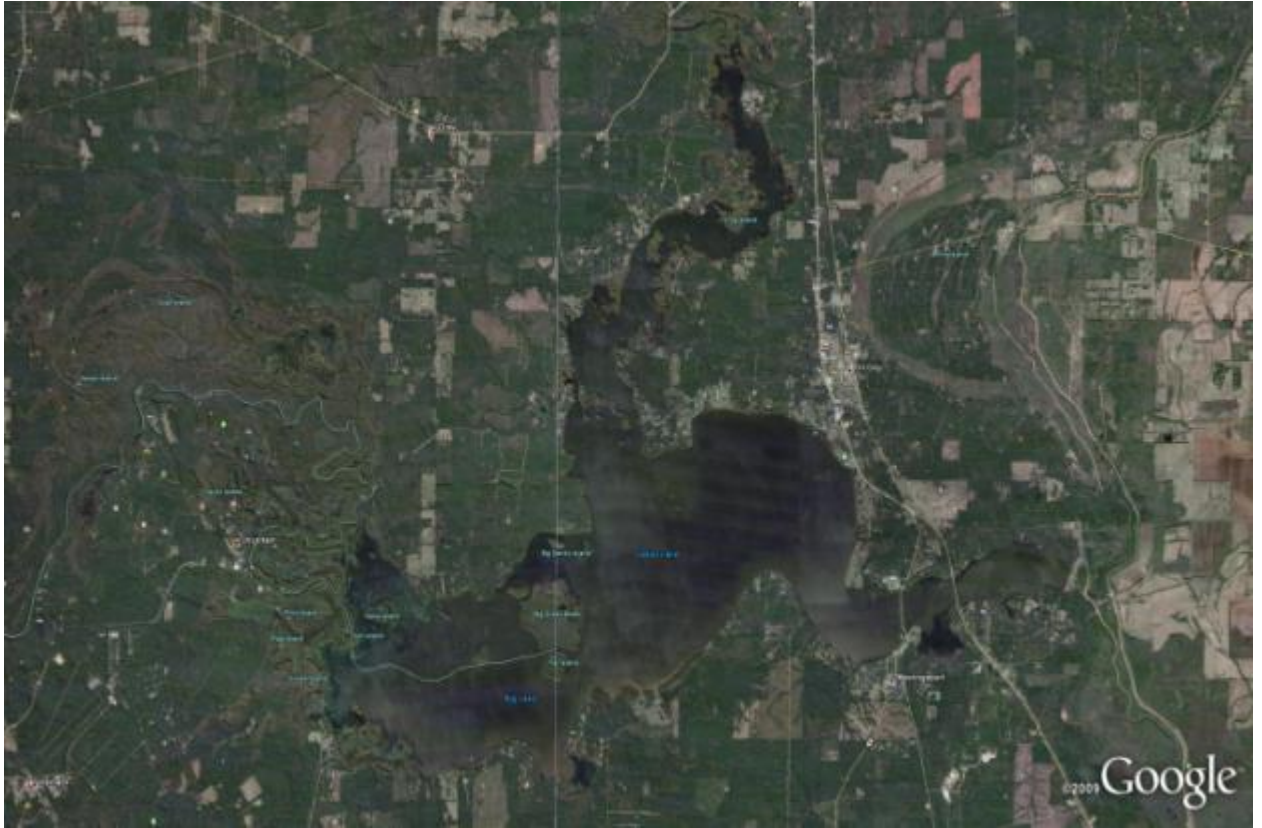
The overall vegetation control strategy for Caddo Lake has not changed since completion of the 2012 plan. As the Caddo Lake Commission does not meet and is inactive, they have not

been notified of these management strategies. We will send Larry Raymond, director of Caddo Parks and Recreation, a copy of this plan as soon as it is approved LDWF Administration.

Typemap:

Vegetation type map surveys were conducted by Inland Fisheries personnel in 2006, 2007, and 2009.





[Caddo Lake \(including TX/LA state line\)](#)

Caddo Lake Vegetation Type Map 2009

The vegetation type mapping survey was conducted by Louisiana Department of Wildlife and Fisheries employees in September of 2009. Kevin Houston identified the major aquatic plant species present in the lake and assessed the extent of coverage around the lake. At the time of the survey, the lake was at 168.88 NGVD, or 1.12 feet below pool stage. Secchi disc readings ranged from 14-18”.

Species Present

The aquatic plant community on Caddo Lake is made up of the following species: water hyacinths(*Eichhornia crassipes*), fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), hydrilla (*Hydrilla verticillata*), primrose(*Ludwigia spp.*), water shield (*Brasenia schreberi*), Illinois pondweed (*Potamogeton illinoensis*), giant salvinia (*Salvinia molesta*), duckweed (*Lemna minor*), aligatorweed (*Alternanthera philoxeroides*), lizard’s tail(*Saururus cernuus*), southern watergrass (*Hydrochloa caroliniensis*), primrose(*Ludwegia uruguayensis*), roadgrass (*Eleocharis baldwinii*), pennywort(*Hydrocotyle umbellate*), spatterdock(*Nuphar luteum*), fragrant waterlily(*Nymphaea odorata*), American Lotus(*Nelumbo lutea*), frog’s-bit (*Limnobiium spongia*), *Sagittaria spp.*, filamentous algae, variable-leaf milfoil (*Myriophyllum heterophyllum*) and chara grass (*Chara spp.*).

Severity

Aquatic vegetation covers nearly 2,150 acres or approximately 15% of the lake on the Louisiana side. Vegetation densities increase in the headwater areas such as Jeem’s Bayou and as one continues west into Texas. In many areas of the lake just across the state line, access is limited to just the boat rows where boat activity keeps vegetation from encroaching on the boat rows. The lake has many shallow coves and pockets where the vegetation is worse and siltation is occurring in many of these areas. Eutrophication is occurring in the lake and the lack of drawdown capabilities and reduced water flow from the upstream Lake of the Pines is adding to the nutrient load problem.

The main lake area has little vegetation present due to wave action and turbidity. Submerged vegetation comprises most of the aquatic plant coverage. Most severe cases are the northernmost sections of Jeem’s Bayou. Fanwort and coontail cover approximately 700 acres in this region. The middle portion of Jeems has a moderate amount of submerged aquatics with most found near the shoreline.

Exotic, invasive plant species pose a severe threat to the aquatic habitat of Caddo Lake. Hydrilla, water hyacinths and giant salvinia are all present on the lake and have the potential to cause many problems.

Hydrilla has been present on the lake for several years, and densities have cycled from year to year. Hydrilla is making a comeback in the State Line, Big Green Break, and Jap Island areas with large amounts of topped out mats surrounding these island areas. Wave action and turbidity

should prevent it from threatening the entire lake.

Floating vegetation, particularly water hyacinths and giant salvinia, have been reduced by major flooding action that occurred in the spring. This flooding activity created a current in the Jeem's Bayou area which cleared much of the open water areas. Giant salvinia still continues to thrive in the low lying, backwater areas; however, Caddo Lake seems to have some self-regulating qualities in defense of floating aquatic vegetation. Once plants are pushed in to open water areas, wind action creates large bands of rolled up vegetation along the bank. These bands of vegetation break down over time. Giant salvinia and water hyacinths cover approximately 500 acres LA side. Both giant salvinia and water hyacinths continue to expand on the Texas side of the lake.

American Lotus can cause problems in many local areas of Caddo Lake. Historically there have been large populations present near Williamson Park, in Buzzard Bay, and along the state line. As noted in the 2006 & 2007 type map surveys, these populations have continued to decline. A couple of larger areas of lotus can be found in Thompson's Arm and Little Green Break.

Caddo Lake Giant Salvinia Coverage February, 14 2013

Legend



Boat_ramps



LA Boundary



Salvinia_2_14_13

Giant Salvinia Coverage 398 Acres

0 0.5 1 2 Miles

